

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): A method of measuring polarization mode dispersion of an optical fiber, comprising:

- inputting a pulse of first linearly polarized ~~pulse~~-light into the optical fiber;
- separating second ~~the input~~-linearly polarized light from backscattered light generated by the input pulse light~~from the optical fiber~~;
- detecting a light intensity of the second linearly polarized ~~backscattered~~-light as time series data since the generation of the pulse light;
- calculating a fluctuation of the detected light intensity; and
- evaluating polarization mode dispersion of the optical fiber based on the calculated fluctuation value.

2. (currently amended): A method of measuring polarization mode dispersion of an optical fiber, comprising:

- inputting a pulse of first linearly polarized ~~pulse~~-light into the optical fiber;
- separating ~~the input~~second linearly polarized light from backscattered light generated by the input pulse light~~from the optical fiber~~, the plane of polarization of the ~~input~~-first linearly

polarized light being the same as the plane of polarization of the ~~backscattered~~ second linearly polarized light;

detecting a light intensity of the ~~backscattered~~ second linearly polarized light as time series data since the generation of the pulse light;

calculating a fluctuation of the detected light intensity; and

evaluating polarization mode dispersion of the optical fiber based on the calculated fluctuation value.

3. (currently amended): The method of measuring polarization mode dispersion in an optical fiber, according to claim 1 or 2, wherein:

a first fluctuation of light intensity is calculated by inputting a pulse of the first linearly polarized ~~pulse-light through~~ into a first end of the optical fiber and detecting time series data of the light intensity of the second linearly polarized ~~backscattered~~ light through the first end of the optical fiber;

a second fluctuation of light intensity is calculated by inputting a pulse of the first linearly polarized ~~pulse-light through~~ into a second end of the optical fiber and detecting time series data of the light intensity of the second linearly polarized ~~backscattered~~ light through the second end of the optical fiber; and

polarization mode dispersion in the optical fiber is evaluated based on an average value of the first fluctuation and the second fluctuation.

4. (original): The method of measuring polarization mode dispersion in an optical fiber according to claim 1 or 2, further comprising:

evaluating polarization mode dispersion in a predetermined section of the optical fiber by comparing fluctuation of the light intensity measured in the predetermined section of the optical fiber with fluctuation of the light intensity measured using the same method in an optical fiber whose polarization mode dispersion is already known.

5. (currently amended): The method of measuring polarization mode dispersion in an optical fiber according to claim 1 or 2, further comprising:

evaluating a longitudinal distribution of polarization mode dispersion of the optical fiber by comparing a fluctuation in the ~~optical~~light intensity measured in each of a plurality of sections in the longitudinal direction of the optical fiber with fluctuation of the light intensity measured using the same method in an optical fiber whose polarization mode dispersion is already known.

6. (currently amended): The method of measuring polarization mode dispersion in an optical fiber according to claim 1 or 2, wherein the fluctuation of the light intensity is calculated as ~~fluctuation in a regression residual error~~ using the least-square method.

7. (original): The method of measuring polarization mode dispersion in an optical fiber according to claim 1 or 2, wherein a scale of the fluctuation of the light intensity is standard deviation.

8. (currently amended): The method of measuring polarization mode dispersion in an optical fiber according to claim 1 or 2, wherein a scale of the fluctuation of the light intensity is a difference between a maximum value and a minimum value of the light intensity in each of a plurality of sections in the longitudinal direction of the optical fiber.

9. (currently amended): An apparatus for ~~carrying out the method of measuring~~ polarization mode dispersion in an optical fiber ~~according to claim 1 or 2~~, comprising:

a pulse light generating device;

an optical circulator that inputs pulse light generated by the pulse light generating device ~~into~~ through an end of the optical fiber, and that outputs backscattered light that has returned through the end of the optical fiber;

at least one polarizer that linearly polarizes the pulse light to be input into the optical fiber and backscattered light output from the optical fiber;

a photodetector that detects a light intensity of linearly polarized light separated from the backscattered light output from the optical circulator as time series since the generation of the pulse light; and

an analyzer that calculates a fluctuation of the light intensity of the linearly polarized light detected by the photodetector, and analyzes polarization mode dispersion in the optical fiber based on the calculated fluctuation value~~light intensity of the backscattered light output from the photo-detector; and~~

~~at least one polarizer that linearly polarizes incident light input into the optical fiber and backscattered light output from the optical fiber.~~

10. (currently amended): The apparatus for measuring polarization mode dispersion in an optical fiber according to claim 9, wherein the at least one polarizer polarizes the ~~incident-pulse~~ light to be input into the optical fiber and the backscattered ~~output-light~~ output from the optical fiber into linearly polarized light of the same plane of polarization.

11. (original): The apparatus for measuring polarization mode dispersion in an optical fiber according to claim 9, wherein the at least one polarizer is a polarization-beam-combiner-type coupler.

12. (currently amended): An apparatus for ~~carrying out the method of measuring~~ polarization mode dispersion in an optical fiber according to claim 1 or 2, comprising:

~~an~~ a commercialized OTDR apparatus that includes:

a pulse light generating device; and

a photodetector that detects a light intensity of linearly polarized light separate from backscattered light generated by the pulse light input through an end of the optical fiber as time series since the generation of the pulse light;
an analyzer that calculates a fluctuation of the light intensity of the linearly polarized light detected by the photodetector, and analyzes polarization mode dispersion in the optical fiber based on the calculated fluctuation value; and
a polarizer that polarizes ~~both incident~~the pulse light to be input into the optical fiber and the backscattered output light output from the optical fiber into linear polarized light of the same plane of polarization.

13. (original): The apparatus for measuring polarization mode dispersion in an optical fiber according to claim 12, wherein an optical amplifier is provided between the commercialized OTDR apparatus and the polarizer.